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REMARKS

I. ANTICIPATION REJECTION

Claims 8 to 13 were rejected under 35 U.S.C. 102 (b) as anticipated by Bier, et al (US '104).

Claim 8 has been amended to further distinguish its subject matter from the prior art, especially the disclosures in Bier, et al.

The added features in claim 8, step b), include the feature that the fissure is produced in the glass sheet in step b) with the cutting tool and the feature that the fissure is produced as the cutting tool moves across the width of the glass sheet with the cutting force predetermined by the controller. The added subject matter to step b) establishes the connection between the fissure and the cutting tool: the cutting tool produces the fissure. Furthermore the cutting force of the cutting tool used to produce the fissure is predetermined by the controller.

Support for the foregoing feature is provided by the disclosure on page 6, lines 10 to 13; page 7, lines 16 to 19; and figs. 2a to 2c of applicants' originally filed specification.

In other words, claim 8 has been amended to state that the fissure is produced with a cutting tool that is applied to the glass sheet with a cutting force that is predetermined by a controller as it moves across the glass sheet during the production of the fissure.

Furthermore the last paragraph of claim 8 has been amended to state that the cutting force specified by the controller at respective locations has a magnitude depending on a corresponding thickness of the glass sheet at the respective locations. This added feature is at the heart of the present invention and is fully supported by the disclosure, e.g. at page 8, lines 30 to 31, and page 8, lines 26 to 28.

The basic purpose of applicants' claimed invention is stated on page 3, lines 16 to 20, and is to provide a fissure that is deep enough in the border regions, which are usually thicker than the center regions, and shallow enough in the center regions of the glass sheet, so that premature separation of the parts is prevented due to fissuring too deeply in the center of the glass sheet and so that the fissure is deep enough in the edge regions to permit good separation with a minimal mechanical force. In other words, the method produces a fissure across a glass sheet that has a varying depth that is a function of the varying thickness of the glass sheet at different positions across the glass sheet: the thicker the glass sheet, the deeper the fissure. See the last two paragraphs of page 3 and the first two paragraphs on page 4 of the applicants' originally filed specification.

Furthermore the dependence of the cutting force used to produce the fissure is made even clearer in applicants' dependent claim 9. This claim claims a method in which an appropriate magnitude cutting force is applied in a region of the glass sheet having a constant glass sheet thickness (such as a center or middle portion of the glass sheet) and applying another cutting force that has an increased or decreased magnitude in another region in which the thickness is

increased or decreased.

Claim 12 claims measuring the thickness of the glass sheet continuously by means of sensors during travel of the cutting tool across the glass sheet and automatically adjusting the cutting force as a function of the measured thickness.

Bier, et al, disclose a cutting apparatus that has a cutting head that is actuated with a constant reluctance electric motor, which can rapidly change depth of score lines or fissures produced with the cutting head. (see abstract) However Bier, et al, does not teach or suggest that the cutting force or score depth should be increased or decreased at positions on the glass sheet that are thicker or thinner than average in a glass sheet whose thickness significantly varies. In contrast, Bier, et al, teach the opposite: that score lines of a predetermined depth are obtained irregardless of small variations in the glass thickness(column 2, lines 7 to 8).

Column 2, lines 5 to 13, of Bier, et al, does disclose varying the depth of the score or fissure formed during one step in a method of cutting a glass sheet, but the disclosure at this point does not disclose increasing or decreasing the depth of the score or fissure when the thickness of the glass sheet increases or decreases in the case of glass sheets that have an inhomogeneous thickness distribution, i.e. glass sheets whose thickness varies across the sheet. There are other purposes for changing the depth of the score or fissure besides accounting for thickness variations across the glass sheet. For example, it may be desirable to cut a deeper score or fissure in the vicinity of the edge of the glass sheet so that during mechanical breakage the separation of the parts starts from the

edges during mechanical breaking along the score or fissure.

Claims 8 and 9 of Bier, et al, claim a method of cutting a pane or window out of a glass sheet, which is also described in column 3, line 37 and following and illustrated in fig. 5 and fig. 4. As can be seen from fig. 5 the cutting force is constant and the same along the linear cutting lines 70 and 75 shown in figure 4. The cutting force is only increased in the corners 72 and 78 shown in fig. 4 as shown by the signal humps 74 and 80 in fig. 5.

The thickness of the glass sheet G however is shown to be constant in fig. 1 and the specification of Bier, et al, indicates that there are only small variations in the thickness of the glass sheet at column 1, about line 41, which amount to less than a tenth of a millimeter for glass sheets that are at least 2 mm thick. Furthermore there is no statement in column 3, line 37 and following, that the thickness at the corners 72, 78 is greater than the thickness along cutting lines 70, 75. There is no suggestion or disclosure that the cutting force at the corners is increased to account for an increase in thickness of the glass sheet.

The only reason for increasing the depth of the score is to facilitate breaking the window or pane out of the glass sheet without waste or breakage due to the relative sharp corners.

Similarly there are no statements in method claims 8 and 9 of Bier, et al, that the cutting force at a particular position along the cutting line depends on the thickness of the glass sheet at that position. Claim 8 only states that the method produces a score line of a predetermined depth at predetermined locations along the cutting line. In other words, the apparatus for performing the claimed method

is capable of producing score lines or fissures of variable depth. Claim 9 goes further by stating that in the case of a closed loop score line the score line or fissure will have a greater depth at the corners of the loop.

Because the devices disclosed by Bier, et al, could be used as part of an apparatus for performing the method according to the invention does not mean that Bier, et al, discloses or suggests the applicants' method. There is not the slightest hint or suggestion or disclosure in Bier, et al, that the cutting force at a particular position along the cutting line should be adjusted according to the thickness of the glass sheet at that position.

Furthermore the devices disclosed by Bier, et al, as shown in figure 3 of this reference, lack any means to measure the thickness of the glass sheet at various positions across the glass sheet along the cutting line. In other words, they lack the position sensor 6 that is shown in applicants' block diagram of the apparatus used to perform the claimed method (figs. 1, 3). In one embodiment of the applicants' method claimed in claim 12 and described in the paragraph on page 8, line 30, to page 9, line 12, the position of the cutting tool 7 is measured continuously as it travels across the glass sheet 1 with the position sensor 6 and the controller 8 increases or decreases the cutting force (at 10) automatically according to the measured glass sheet thickness (see fig. 3).

Thus the apparatus disclosed in Bier, et al, **could not perform** the automatic adjustment method for the cutting force claimed in applicants' claim 12. Since the means to perform the claimed method of claim 12 are not disclosed in Bier, et al, how could Bier, et al, disclose or suggest the method claimed in

applicants' claim 12?

It is well established that each and every limitation of a claimed invention must be disclosed in a single prior art reference in order to be able to reject the claimed invention under 35 U.S.C. 102 (b) based on the disclosures in the single prior art reference. See M.P.E.P. 2131 and also the opinion in *In re Bond*, 15 U.S.P.Q. 2nd 1566 (Fed. Cir. 1990).

Bier, et al, does not disclose or suggest a method for varying cutting force according to thickness variations of a glass sheet with an inhomogeneous thickness distribution as claimed in the preamble of amended claim 8. Furthermore they do not disclose or suggest that the cutting force at a particular position along the cutting line depends on the thickness of the glass sheet at that position, i.e. that the cutting force is increased when the thickness increases and *vice versa*.

For the foregoing reasons and because of the changes in amended claim 8, withdrawal of the rejection of claims 8 to 13 under 35 U.S.C. 102 (b) as anticipated by Bier, et al, is respectfully requested.

II. OBVIOUSNESS REJECTION

Claim 14 was rejected under 35 U.S.C. 103 (a) as obvious from Bier, et al.

Dependent claim 14 claims a preferred embodiment of the method claimed in amended claim 8 in which the cutting tool is or comprises a heat

source, for example the cutting tool could comprise a laser beam. The fissure is produced by a thermo-mechanical strain using the laser beam. The cutting force depends on the laser beam power, i.e. the heat produced by the laser beam.

In the method according to the amended claim 8 the laser beam power would be increased when the thickness of the glass sheet increases and decreased when the thickness decreases.

It is respectfully submitted that the subject matter of claim 14 is not obvious because it includes the subject matter of claim 8, which is not obvious from the disclosures in Bier, et al. In other words, applicants are relying on the features of the amended claim 8 to obtain allowance of claim 14.

For the foregoing reasons and because of the changes in claim 8, withdrawal of the rejection of claim 14 under 35 U.S.C. 103 as obvious from Bier, et al, is respectfully requested.

The disclosures in Bier, et al, fail to establish a case of *prima facie* obviousness of the amended claim 8.

There is not the slightest hint or suggestion in Bier, et al, that the cutting force at a particular position along the cutting line should be adjusted to depend on the thickness of the glass sheet at that position.

It is well established by many U.S. judicial decisions that there must be some hint or suggestion of all essential features of a claimed method in a prior art reference to provide the basis for an obviousness rejection based on the

disclosures in the prior art reference. See for example MPEP 2143.01 and MPEP 2143.03. Furthermore the Federal Circuit Court of Appeals has said:

"The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification..... It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Fritch*, 23 U.S.P.Q. 2nd 1780, 1783-84 (Fed. Cir. 1992).

In addition, Bier, et al, teaches cutting a sheet of glass that has an essentially constant thickness (fig. 1, column 1, about line 41). The basic problem that the applicants' invention is trying to solve, namely the uniform cutting of glass sheets that have an inhomogenous thickness distribution, such as thicker at the edges than in the middle, is not discussed in Bier, et al. How could a reference that does not disclose the problem that the inventive method is trying to solve suggest its solution?


Thus it is respectfully submitted that amended claims 8 to 13 should not be rejected under 35 U.S.C. 103 (a) as obvious over Bier, et al.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put

this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549 4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,



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